

WHAT IS CLAIMED IS:

1. A connection link restoration method between a first information communication apparatus and a second information communication apparatus, the first information communication apparatus comprising a communications module and a host computer, the communications module performing the method which comprises:

communicating between the first information communication apparatus and the second information communication apparatus through a radio transmission link;

detecting a disconnection of the radio transmission link;

analyzing a reason for the disconnection of the radio transmission link;

determining whether or not to reconnect the disconnected radio transmission link on the basis of the analysis of the disconnection reason;

generating a reconnection command signal if the disconnected radio transmission link should be reconnected, and

generating a forced link disconnection command signal if the disconnected radio transmission link should not be reconnected.

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2. The connection link restoration method according to claim 1, wherein after determining that the disconnected radio transmission link should be reconnected, a control

unit of the communications module determines whether or not the radio transmission link is connected from the first information communication apparatus based on the analyzed reason for disconnection, generates the reconnection command  
5 signal if the radio transmission link is connected from the information communication apparatus, and waits for the reconnection command if the radio transmission link is not connected from the first information communication apparatus.

10           3. The connection link restoration method of claim 1, wherein the communication is performed between the first information communication apparatus and only one second information communication apparatus.

15           4. The connection link restoration method according to claim 1, wherein the communications module is a BLUETOOTH module, and wherein a control unit of the communications module determines whether the reason for the disconnection of the radio transmission link arises from a plurality of  
20 upper protocol layers or a lower protocol layer provided in the BLUETOOTH module.

          5. A connection link restoration method for a first information communication apparatus, comprising:  
25           providing a host computer;  
          providing a communications module in communication with the host computer, performing;  
          communicating data through a data transmission

link;  
detecting a disconnection of the data transmission  
link;  
analyzing a reason for the disconnection of the  
5 data transmission link;  
determining whether or not to reconnect the  
disconnected data transmission link on the basis of  
the analysis of the disconnection reason;  
generating a reconnection command signal if the  
10 disconnected data transmission link should be  
reconnected; and  
generating a forced link disconnection command  
signal if the disconnected data transmission link should  
not be reconnected.  
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6. The connection link restoration method according to  
claim 5, wherein after determining that the disconnected  
data transmission link should be reconnected, a control unit  
of the communications module determines whether or not the  
20 data transmission link is connected from the first  
information communication apparatus based on the analyzed  
reason for disconnection, generates the reconnection command  
signal if the data transmission link is connected from the  
first information communication apparatus, and waits for the  
25 reconnection command signal if the data transmission link is  
not connected from the first information communication  
apparatus.

7. The connection link restoration method of claim 5, wherein the communication is performed between the first information communication apparatus and only one second information communication apparatus.

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8. The connection link restoration method of claim 5, wherein the communication is performed between the first information communication apparatus and a plurality of second information communication apparatus.

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9. A connection link restoration method for a first information communication apparatus including a host computer and a communications module having a control unit, the communications module performing the method which

15 comprises:

performing radio communication by transferring a radio transmission signal;

detecting disconnection of a radio transmission link for the radio transmission signal;

20 analyzing, in the control unit, a reason for the disconnection of the radio transmission link;

determining whether or not to reconnect the disconnected radio transmission link on the basis of the analysis of the disconnection reason;

25 generating a reconnection command signal if the disconnected radio transmission link should be reconnected; and,

generating a forced link disconnection command signal if

the disconnected radio transmission link should not be reconnected.

10. A connection link restoration means, comprising:
- 5 means for performing radio communication;
- means for detecting disconnection of a radio transmission link for a radio transmission signal,
- means for analyzing a reason for the disconnection of the radio transmission link,
- 10 means for determining whether or not to reconnect the disconnected radio transmission link on the basis of the analysis of the disconnection reason,
- means for generating a reconnection command signal if the disconnected radio transmission link should be
- 15 reconnected; and
- means for generating a forced link disconnection command signal if the disconnected radio transmission link should not be reconnected.
- 20 11. The connection link restoration means according to claim 10, wherein the radio communication means comprises a first information communication apparatus and a second information communication apparatus, means for determining whether or not the radio transmission link is connected from
- 25 the first information communication apparatus on the basis of the analysis of the disconnection reason, means for generating the reconnection command signal if the radio transmission link is connected from the first information

communication apparatus, and means for waiting for the reconnection command signal if the radio transmission link is not connected from the first information communication apparatus.

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12. The connection link restoration means according to claim 10, wherein the radio communication is performed between the first information communication apparatus and only one second information communication apparatus.

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13. The connection link restoration program according to claim 10, wherein the radio communications means has a communications module, the communications module is a BLUETOOTH module, and wherein a control unit in the communications module comprises the means for determining whether the reason for the disconnection of the radio transmission link arises from a plurality of upper protocol layers or a lower protocol layer provided in the BLUETOOTH module.

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14. A communications system, comprising:

a first information communication apparatus being in communication with a second information communication apparatus;

25 the first information communication apparatus having a host computer and a communications module interfaced with the host computer; and

the communications module having a control unit which

determines a reason for a failure of communications between the first information communication apparatus and the second information communication apparatus,

wherein a link disconnection signal is not sent to the  
5 host computer when there is a failure of communications between the first information communication apparatus and the second information communication apparatus.

15. The communications system according to claim 14,  
10 wherein the control unit determines whether a reconnection command signal should be generated.

16. The communications system according to claim 15,  
wherein communications module further comprises a connection  
15 restoration circuit unit that reacts to the reconnection command signal by restoring a link connection between the first information communication apparatus and the second information communication apparatus if the link is connected from the first information communications apparatus, and  
20 waiting for a circuit reconnection signal from the second information communications apparatus if the link is connected from the second information communications apparatus.

25 17. The connection link restoration method of claim 14, wherein the communication is performed between the first information communication apparatus and only one second information communication apparatus.

18. The communications system according to claim 14,  
wherein the control unit determines that a communications  
link should not be reconnected and generates a forced link  
5 disconnection command.

19. The communications system according to claim 18,  
wherein the communications module comprises a connection  
restoration circuit unit, the forced link disconnection  
10 signal is sent to the host computer, and the reconnection  
command signal is sent to the connection restoration circuit  
unit.

20. A data communications system, comprising:  
15 a first information communication apparatus having a  
host computer and a communications module, the  
communications module having a control unit and a connection  
restoration circuit unit; and

the information communication apparatus performing data  
20 communication through a data communications link;

the control unit analyzing whether or not to reconnect  
data communications link when the data communications link  
has been disconnected based on a disconnection reason and  
inhibits a link disconnection signal from being communicated  
25 to the host computer; and

the control unit generates a reconnection command signal  
if the data communications link should be reconnected and a  
forced link disconnection signal if the disconnected signal

should not be reconnected.

21. The data communications system according to claim 20,  
wherein the forced link disconnection command signal is  
5 communicated to the host computer.

22. The data communications system according to claim 20,  
wherein when the control unit determines that the data  
communications link should be reconnected, the control unit  
10 analyzing whether the data communications link is connected  
from the first communications apparatus, and generates a  
reconnection command signal, and waits for the reconnection  
command signal if the data communications link is not  
connected from the first communications apparatus.

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